What is claimed is:

1. A microrelay device for opening and closing a current path between first and second terminals that are carried on a substrate, the device comprising the combination of:
first and second electrically conducting latching beams, the first beam having a distal end together with a proximal end electrically connected with the first terminal, the second beam having a distal end together with a proximal end electrically connected with the second terminal, the first beam being sufficiently elastic to enable it to bend responsive to a bending force from a first configuration at which the distal ends are unlatched toward a second configuration at which the first beam is curved and the distal ends are latched, the distal ends when unlatched being spaced apart sufficient to open the current path between the first and second terminals, the distal ends when latched being in electrical contact to close the current path, and an actuator for applying the bending force to the first beam.

2. A microrelay device as in claim 1 and further characterized in that the second beam is in a first configuration when the distal ends are latched, the second beam being sufficiently elastic to enable it to bend responsive to an other bending force from its first configuration to a second configuration at which the distal ends are unlatched, and an other actuator for applying the other bending force to the second beam.

3. A microrelay device as in claim 1 in which the first configuration is in a curve which causes the first and second beams to buckle together with a closure force between the beams that is sufficient to releasably hold the distal ends in the latched position.

4. A microrelay device as in claim 3 in which the closure force is independent of the bending force.

5. A microrelay device as in claim 1 in which the distal ends comprise complementary respective shapes which interfit in releasable engagement when latched.

6. A microrelay device as in claim 1 in which the actuator comprises a thin film band of shape memory alloy material which undergoes crystalline phase change when heated through the material's phase change transition temperature sufficient to cause the band to deform from a first shape to a memory shape, the band being coupled with the first beam and applying said bending force responsive to said deformation to the memory shape.

7. A microrelay device as in claim 7 in which the band in the first shape is stretched under a tension prestress, and the deformation is by axial contraction to the memory shape.

8. A microrelay device as in claim 2 in which the other actuator comprises an other thin film band of shape memory alloy material which undergoes crystalline phase change when heated through the material's phase change transition temperature causing the band to deform from a first shape to an other memory shape, the band being coupled with the second beam and applying said other bending force responsive to said deformation to the other memory shape.

9. A microrelay device as in claim 8 in which the other band in the first shape is stretched under a tension prestress, and the deformation is by axial contraction to the memory shape.

10. A microrelay device as in claim 6 in which the band is comprised of a pair of parallel spaced-apart segments having proximal ends anchored to the substrate with the distal ends of the bands being electrically coupled together and coupled with a portion of the first beam spaced from its proximal end, said band

segments having a memory shape which causes them to undergo said deformation by contraction, and the band segments being oriented along a direction parallel with the first beam so that said contraction causes the band segments to exert a pulling on said portion of the first beam to apply said bending force.

11. A method for closing a current path between first and second terminals of a microrelay device, the method comprising the steps of attaching proximal ends of a pair of electrically conducting latching beams to terminals on a substrate of the device, elastically bending one of the beams into a curved configuration, engaging a distal end of the one beam with a distal end of the other beam, and closing the current path responsive to said engagement.

12. A method as in claim 11 for opening the current path and further comprising the steps of elastically bending the other beam into an other curved configuration sufficient cause the distal ends to disengage, and opening the current path responsive to said disengagement.

13. A method as in claim 12 in which the steps of bending the beams comprises applying a closing force axially along the beams sufficient for releasably holding the distal ends together.

14. A method as in claim 11 in which the step of elastically bending the one beam is carried out by applying a pulling force on the one beam in a direction which creates a force couple on the one beam.

15. A method as in claim 11 in which the steps of bending the one beam comprises providing a band of shape memory alloy material which undergoes crystalline phase change when heated through the material's phase change transition temperature sufficient to cause the band to contract from a first shape to a memory shape, coupling the band between the distal end of the one beam

and the substrate, heating the band through the transition temperature sufficient for causing the band to contract to the memory shape, and causing contraction of the band to create a force couple on the one beam.